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ABSTRACT

This journal issue focuses on the theme of the education of gifted female students. This document consists of the five articles devoted to this subject. The lead article by Carolyn M. Callahan, titled "How Schools Shortchange Girls: Implications for Parents and Educators of Gifted Girls," discusses the development of gender roles, the experiences that young women have in school, and the continued lack of interest and achievement in mathematics and science among females most talented in those areas. An editorial by Jean Drum comments on why "America Needs Heroines," and two high-school students (Debra Russell and Nina Alexander) present "What It Means To Be Gifted and a Woman." "Factors Affecting the Achievement of Culturally Diverse Gifted Women" (Margie K. Kitano and Carol O. Perkins) examines demographic data concerning gifted women from diverse backgrounds, presents models of adult achievement, and analyzes the literature to determine factors affecting the achievement of gifted women of color. "Gifted Females: They've Come a Long Way--Or Have They?" (Sally M. Reis and Carolyn M. Callahan) reviews research on gender differences, examines continuing performance gaps in careers and professional accomplishments of men and women, and proposes more promising research directions. "Living Out the Promise of High Potential: Perceptions of 100 Gifted Women" (Kathleen D. Noble) presents an overview of literature relating to the psychological, social, cultural, and cognitive issues confronting gifted women as they strive to develop their potential; reviews findings of a study of the lives of 100 contemporary adult gifted women in the Pacific Northwest; suggests kinds of psychological interventions which would enable highly capable women's development and achievement to be maximized; and presents research directions. (JDD)

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GIFTED GIRLS

How Schools Shortchange Girls: Implications for Parents and Educators of Gifted Girls

by Carolyn M. Callahan

Early this year the American Association of University Women re-leased a comprehensive report on the education of women prepared by the Wellesley College Center for Research on Women. This report, entitled *How Schools Shortchange Girls* (AAUW, 1992a), grew out of concerns that the debates around educational reform of the past decade had largely ignored the needs of females. A review which assessed the amount of attention given to gender and sex equity issues in 35 reports issued by special task forces and commissions since 1983, resulted in the finding that only four gave serious attention to these issues and only one made a specific recommendation.

> *This invisibility of girls in the current debate suggests that girls and boys have identical educational experiences in school. Nothing could be further from the truth. Whether one looks at achievement scores, curriculum design, or teacher-student interaction, it is clear that sex and gender make a difference in the nation's public schools. The educational system is not meeting girls' needs (AAUW, 1992c, p. 31).*

Although the needs of gifted girls were not the explicit focus of the report, the data summarized, the conclusions reached, and the implications are often directly related to the issues which face gifted young women in our schools. The most pertinent findings and issues revolve around the development of gender roles, the experiences that young women have in school, and the continued lack of interest and achievement in mathematics and science among the females most talented in those areas. They are discussed briefly here, with selected citations from the report to illustrate the issues.[1]

Development of Gender Roles

Male and female children begin the development of gender roles in infancy, but the adoption of these roles in stereotypic and rigid fashion at the beginning of adolescence is the first indication of potential limitations that females –especially gifted females – impose on themselves. For example, by sixth grade, girls "rate being popular and well-liked as more important than being perceived as competent or independent. Boys...are more likely to rank independence and competence as important" (AAUW, 1992a, p. 11). While we certainly do not expect females (or males for that matter) to abandon concern for others, the obvious danger is that girls may begin to act on their beliefs to pursue popularity at the expense of the pursuit of independence and competence – a tragic loss.

At the same time we see other indicators that are even more detrimental to the gifted female. Nearly every longitudinal study reports significant declines in the self-esteem and self-confidence of females as they move from childhood into early adolescence. These sig-

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Sandra Kaplan

When Opportunity Knocks... or Fails to Knock

Students willingness to use available academic opportunities and to create opportunities for themselves are necessary components in attaining academic success and personal fulfillment. The comment, "If I only had the opportunity...." might better be phrased, "How can I make the opportunity?" Both parents and teachers share the responsibility to help gifted students learn to assess and accept the opportunities that are presented to them. Gifted programs need to include within the curriculum discussions about the value of accessing and structuring opportunities that can support the students' abilities.

Gifted students often are resistant to the opportunities available to them. When presented as an ancillary experience or as an additional feature of the educational process, the opportunities that could be meaningful for students are discounted or ignored. When presented as a potentially unforgettable experience by an over-zealous adult, the opportunities that could contribute meaningfully to the gifted student are rejected. Gifted students will describe how they devalued the opportunities presented to them because of both how they were offered and who was presenting the opportunity.

Gifted students who readily take advantage of the opportunities presented to them sometimes are perceived as greedy. Gifted students who attempt to define and structure opportunities for themselves are viewed as aggressive. This situation seems to transcend gender and seems to be particularly related to the concept that gifted students do not need more opportunities since they already are privileged, so to speak. Of concern is that during current times when economic and academic opportunities are being curtailed, gifted students need even more assistance in being able to make decisions about how to take and make opportunities. One quality of a differentiated curriculum would be to teach gifted students how to make a match between the availability of opportunities and the profile of their needs, interests, and abilities.

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ON THE LIGHT SIDE

by Jean Watts

Yes...Reality is very clear to me ... and coloring yellow chickies is not it.

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Bloomfield Hills, MI

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California Association for Bilingual Education (CABE)
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The Best of Both Worlds
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March 5-7, 1993 ♪

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Watch for them!

Jean Drum

America Needs Heroines

Every so often an observer of American life writes an article decrying the lack of heroes in our society. There's no one to look up to, no one to admire, no one to pattern ourselves after. Government officials are embarrassingly fallible, police don't inspire significant numbers of citizens, doctors are sometimes seen as more concerned with avoiding malpractice suits than caring for patients, teachers are portrayed as incompetent or ineffective, and even parents no longer occupy the pedestal they once enjoyed. Of course, these commentators admit that the dreadful examples they use may be the exception rather than the rule, but it is generally agreed that heroism isn't what it used to be.

What about heroine-ism? We may be facing a dearth of heroes just now, but think about it. Who are our heroines? Who do Americans think of when they say the word heroine? Betsy Ross? Well, maybe. Clara Barton? Elizabeth Blackwell? Susan B. Anthony? Suffragettes? Rosie the Riveter? Amelia Earhart? Eleanor Roosevelt? These are all inspiring women, and there are more, lots more, but however you add it up, *there aren't enough.* Those are all names from the past. What we need to consider is the present, or maybe the year 2000 and the fulfillment of the National Education Goals. What we need is more heroines, role models for girls, all girls, but especially gifted girls.

In her article in this issue, Kate Noble quotes a study which says "no child will choose a career that she does not know about or cannot identify with," and this is the crucial issue. How can gifted girls and women fulfill their potential when they meet, read about, see on television so few women in roles of leadership, so few women being admired nationally (or internationally) for exceptional contributions? The figures are too well known to need repeating – the still dismally low percentage of women in government, on university faculties, in medicine and law, in public school administration, the areas where policy is made and ideas turn into reality. When girls see teachers, but few principals and even fewer superintendents, lots of nurses but still not many doctors, one Supreme Court justice and thousands of paralegals, they have an overwhelmingly difficult time envisioning themselves in anything but less significant roles.

Our mission is clear. We must provide gifted girls with heroines to admire and to whose achievements they can aspire. We must find all the heroines we can, the women who are in positions of leadership right now, and we must put them in touch with the upcoming generation of girls. We have to find ways to write about them in publications, see that their achievements and positions are aired on television, convince them that coming to schools and talking to classes (the boys need to hear this too) is worth their time. We need to put pressure on television and the film industry to show women in serious positions of authority and competence.

Teachers have a significant role to play in all of this. We've all read the studies suggesting that boys and girls are treated differently in class, and we need to look at ourselves in the classroom and be sure we aren't contributing to this. Above all, we need to encourage girls to feel they can be successful in math and science, those areas which are so notoriously male dominated. If by the year 2000 we want American students to be "first in the world in science and mathematics achievement," we (and this means every teacher who walks through a classroom door every day) must make a concerted, definite effort to see that girls are included completely in science and math education starting with their first day in kindergarten.

Yes, we need heroes. Inner city kids need heroes. Disabled kids need heroes. Minority kids need heroes. Just plain ordinary kids need heroes. And at least half of those heroes need to be heroines!

What it Means to be Gifted and a Woman

by Debra Russell and Nina Alexander

Nineties men are finally able to cry. ...It is surely time for women to stop playing the role of the somewhat silly, defenseless little woman who may compete in the man's world but who really belongs in the kitchen and the bedroom.

Being a woman is no easy job, but being intelligent as well is an even tougher challenge. We have all struggled with the stereotyping and prejudices with which our society has labeled women in this male-dominated nation.

A recent American Association of University Women study states that curriculum commonly ignores or stereotypes females, that sex bias is found in standardized tests, that the gender gap in science has not declined and may be increasing, that girls who want to take college math have closed the gap with men in their field but are still not pursuing math-related careers in proportion to men. We ask ourselves why these facts are still a reality in the nineties.

Celina Miranda, an 11th grade GATE student at Century High School, recently did a study on feminism for her honors project. Miranda told us, "Every day brings about a new challenge. I face these challenges with diligence and strive for successful results. At the same time, I must prove to those around me that my gender does not limit my potential as an individual human being." Why does one still have to prove that being female does not limit one's ability?

We discussed the question of being gifted and a woman with several girls from our 9th grade honors English class. One of the most striking themes to emerge was that many girls will hide their intelligence around men because they sense that if they are considered "smart" they will scare the men away. Another theme that emerged was the fact that girls will react and defend themselves against blatant sexist remarks but that they will ignore the sexual innuendos with which we are all familiar. In fact, women are so used to these subtle sexist remarks that often we don't even notice them. It is worthwhile to note that these 9th grade girls could relate this behavior to their parents' lives and the lives of their parents' peers as well as to their own. One obvious example of this is that when a woman is moody it is often attributed to PMS. When a man is moody, he has had a hard day at work.

We have all heard stories of teachers who direct their questions more to the boys and who seem to favor the male gender. Fortunately, we have not encountered this problem in our classrooms. We seem to face the most difficulties outside of school. Proving that we are intelligent, that we do have ambitions beyond marriage and children, is not always an easy task. However, in our GATE classes, the teachers are exceptional. They treat each student with respect and as a person, not a gender. The biggest problem is that being both a woman and gifted places one in a real minority situation, a situation that is often uncomfortable because of our male-dominated society.

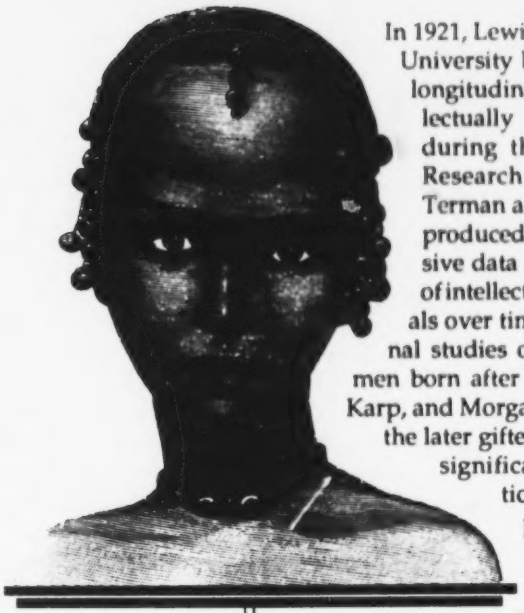
We feel that the media has been the major problem in the stereotyping of gifted women. Many movies and most commercials portray women as bimbos or sex symbols. If women are smart or gifted, they are often seen as unattractive and even, in some cases, evil. The only way to change the image society has created and that many women have fed by accepting it and by covering up their intelligence is by changing our way of thinking and forcing the media to change its stereotyping. After all, in the nineties men are finally able to cry. They don't have to be the macho figure all the time. If this is so, then it is surely time for women to stop playing the role of the somewhat silly, defenseless little woman who may compete in the man's world but who really belongs in the kitchen and the bedroom. It is time for women to emerge as the intelligent beings they really are.

It is surely up to the gifted woman to lead the way, not in a war against men, but simply to assert one's right to be an intelligent being as well as a woman, to force society to accept the fact that intelligent, gifted women are a natural part of our society and are here to stay.

Debra Russell and Nina Alexander are GATE students at Century High School in Santa Ana, California, and members of the SAGE Leadership Team.

Factors Affecting the Achievement of Culturally Diverse Gifted Women

by Margie K. Kitano and Carol O. Perkins



In 1921, Lewis Terman of Stanford University began his pioneering longitudinal study of 1,528 intellectually gifted children born during the previous decade. Research on this sample by Terman and his colleagues has produced the most comprehensive data on the characteristics of intellectually gifted individuals over time. Recent longitudinal studies of gifted women and men born after 1940 (e.g., Subotnik, Karp, and Morgan, 1989) indicate that the later gifted women have made significant gains in educational attainment and professional status as compared with the Terman women. Unfortunately, neither the early nor the more recent studies offer significant insight on gifted women from ethnically diverse backgrounds. To provide understanding about the lives of ethnically diverse gifted women, this article presents a synthesis of extant literature and derives hypotheses concerning factors affecting this group's achievement. The article begins with a discussion of demographic data that substantiate the need to generate information concerning gifted women from diverse backgrounds.

The Data

Available data on school-age children identified as gifted indicate that culturally diverse gifted children, whether male or female, tend to be underserved (Multifunctional Resource Center, 1990; Zappia, 1989). Collectively, these data suggest that while increasing numbers of ethnic children are being enrolled in programs for the gifted, the number of Hispanics and African-Americans in such programs is less (in some cases by over half) than what would be expected from their numbers in the general population.

Few data are available regarding the achievement of ethnically diverse gifted women. The underachievement of this group can be inferred from separate findings on gifted women and the professional attainments of women and ethnically diverse individuals.

Although the incidence of giftedness in boys and girls is equal, the number of males exceeds the number of females in terms of adult achievers. As Callahan (1981, 1991; Reis and Callahan, 1989) has pointed out, the literature on gifted adults suggests that a substantially greater proportion of creative, productive adults are males. One study of 400 historically eminent individuals included only 52 women (Goertzel and Goertzel, 1962). A subsequent examination of 300 contemporary individuals of eminence (Goertzel, Goertzel, and Goertzel, 1978) mentioned only 78 women. Nationally, women have increased their share of doctorates. According to the *Chronicle of Higher Education* (April 25, 1990), women earned 36.5% of all doctorates awarded in 1989. However, of American citizens earning doctorates, only 3.6% were African-American, 2.5% Hispanic, 2.7% Asian, and 0.4% Native American.

The business sector also reports low participation of women and ethnically diverse individuals in management. Morrison and Von Glinow (1990) cited the following statistics:

Women represent only 3.6% of board directorships and 1.7% of corporate officerships in Fortune 500 companies (1988 study), 8.6% in Senior Executive Service levels in the U.S. Government (1989 study), and an average of 1.1 senior administrator (i.e., dean level or above) per college or university nationwide (1986 study).

Regarding ethnically diverse men and women, one African-American heads a Fortune 1000 company (1988 study), and in 400 of the Fortune 1000 companies, less than 9% of all managers were African-American, Hispanic, or Asian (1986 study).

In sum, the literature points to unequal access of culturally different children to educational programs for the gifted and unequal access of women and ethnically diverse individuals as adults to positions of professional

status. Even with the advent of the women's liberation movement, the proportion of women holding top positions in business, academia, science, journalism, literature, and the arts – virtually all professional fields – continues to be small. When individuals are both culturally diverse and female, the obstacles to equal access compound. Society's loss of the potential contributions of gifted women from culturally diverse backgrounds makes the acquisition of information that will promote their development critical.

Models of Adult Achievement

Theoretical models of adult achievement that consider structural, institutional, and societal factors in addition to individual and background characteristics, appear most appropriate for understanding achievement of culturally diverse gifted women. A synthesis of allocation and traditional socialization models is required to conceptualize diverse gifted women's educational and career attainment.

According to Kerckhoff (1976), the traditional socialization model of status attainment suggests that an individual's ability and early socio-economic status (SES) explain the ultimate level of education achieved, and that these three variables explain occupational attainment. Mediating socialization process variables include encouragement by significant others (parents, teachers, peers) and the child's aspirations. Thus, the socialization model attributes outcomes to the individual's evolving personal characteristics as shaped by significant others in his or her environment.

Kerckhoff also describes a competing view, an allocation model of status attainment. This latter model minimizes the significance of variations in socialization outcomes, motivation, and skills and instead emphasizes social forces and structural limitations, such as institutional criteria for identifying, selecting, and classifying individuals. Allocation models assume that structural factors (those outside individual control) exert profound influence on the position one ultimately reaches. Kerckhoff and others (e.g., Wilson, 1987) argue that the traditional status attainment model, which assumes that individuals operate in an open opportunity system, has less applicability to ethnically diverse populations, individuals from low-SES backgrounds, and women.

Betz and Fitzgerald (1987, p. 143) summarized individual, background, educational, and adult lifestyle factors which are generally supported in the empirical literature as enhancing women's career achievement. Individual variables are high ability, liberated sex role values, instrumentality, androgynous personality, high self-esteem, and strong academic self-concept. The authors point to having had a working mother, supportive father, highly educated parents, female role models, adolescent work experience, and androgynous upbringing as important background variables. Educational variables include higher education, continuation in mathematics, and girls' schools and women's colleges. Late marriage or single status with few or no children constitute adult lifestyle factors facilitative of women's career achievement.

Betz and Fitzgerald note that the manner in which these factors interact to impact career development requires investigation. They conclude that no satisfactory theory of career development of women exists. "Given that girls surpass boys in school achievement at all levels, but lag far behind in ultimate educational and occupational level attained, an appropriate model will have to include barriers to women's career development, both internal and external, that reduce the extent to which their abilities are actualized." One can readily infer the absence of a satisfactory theory of the career development of *gifted women* and *culturally diverse gifted women.* Given the "triple minority" status of such women and their culturally defined socialization experiences, structural and socialization factors must be examined in addition to personal/individual attributes.

Factors Affecting Gifted Women's Achievement

Findings of comparative, longitudinal, retrospective, and analytic studies on gifted women have yielded information consistent with Betz and Fitzgerald's summary (1987) of variables that support women's career achievement. However, as noted above, few studies specifically address diverse gifted women. One notable exception is Arnold and Denny's case study report (1991) on five African-American (three women and two men) and three Mexican-American (all women) 1981 Illinois high school valedictorians. For the most part, inferences must be drawn from available literature on gifted women and on high-achieving individuals from culturally diverse backgrounds.

Table 1

Selected Studies on Factors Affecting Ethnically Diverse Achieving Women (& Men)

Reference	Factors Affecting Achievement		
	Personal	Background/Socialization	Structural
Arnold and Denny (1991) Followup of 8 black and Mexican-American subjects from study of 1981 Illinois high school valedictorians	persistence; determination	strong family ties lead to sense of responsibility to family of origin; commitment to community	economic hardship; support/encouragement from college faculty
Simoniello (1981) 8 case studies of high-achieving professional Latinas	some assimilation; independence; goal orientation	high parent expectations for high school, with less support for higher educ., especially from fathers; expectations of obedience to parents; conflict over nontraditional careers	experiences with discrimination; sexism experienced within family and society
Lane (1973) Retrospective analysis of 22 female and male African-Americans from poverty backgrounds	average 2nd grade IQ; increase of 8 points in 8th grade while controls declined	married parents both living at home during subjects' childhoods; high mobility but less than control	questionable validity of IQ scores
Allen (1985) 327 female and male African-American undergraduates at six "white" state universities	3.4 high school GPA; high aspirations; drop in female acad. perf. cf. to males; aspiration levels lower for females and lower SES subjects	parents graduated from high school; 25% graduated from college	academic achievement related to favorable faculty relations, high school grades
	Adolescents		
VanTassel-Baska (1989) Case studies of 15 disadvantaged gifted adolescents, including 8 black and 1 Asian	high level of school success; positive attitudes toward school; need for achievement; some external motivation; procrastination	high parental aspirations, expectations, and standards for achievement; role of extended family; importance of grandmother for girls; limited peer involvement	importance of teachers and school
Lee (1984, 1985) 68 black students grades 8-12 in a SE rural school system; identified by school as successful academically and socially	high achievement motivation; consistent study habits; future orientation; high aspirations; high social consciousness; religious beliefs; black pride but low levels of black consciousness; self confidence; perceived differences from peers	high parental encouragement; values of respecting others and elders, honesty, church; importance of extended family; domestic responsibilities;	most indicated no experience with racially related problems in school (predominantly black system)
Fordham (1988) ethnographic study of 6 high-achieving black high school students, 3 male/3 female in predominantly black school	females showed "unequivocal commitment to values and beliefs of dominant social system"; use of "racelessness" as a strategy to cope with ambivalence about achieving.		raceless persona valued by school

Interestingly, even the literature on high achievers among some ethnic groups is sparse, perhaps due to adoption of theoretical models that predict underachievement as normative for these groups (Slaughter-Defoe, Nakagawa, Takanishi, and Johnson, 1990).

Table 1 summarizes findings of studies that illuminate factors affecting the performance of high-achieving adults and adolescents from culturally diverse backgrounds. Consistent with the model of contributing factors described above, we have organized the findings as personal characteristics, socialization and other background influences, and structural factors.

Factors Affecting the Achievement of Gifted Women of Color

Hypotheses regarding factors affecting the achievement of ethnically diverse gifted women can be derived from the foregoing literature. Table 2 presents (a) factors found by Betz and Fitzgerald (1987) to enhance the career achievement of women in general; (b) additional factors inferred from the literature as supporting the achievement of ethnically diverse gifted women; (c) barriers found for gifted women in general; and (d) additional barriers that might be hypothesized for gifted women of color based on the literature reviewed.

If verified, these hypotheses may have implications for teachers, parents, and counselors regarding early recognition and acknowledgement of the potential of culturally diverse gifted girls; early support of ethnic and personal pride; identification of supportive peer groups; strategies for recognizing and responding to harassment, and sexual and racial discrimination; strategies for obtaining financial assistance; strategies for finding peers and ob-

Table 2

Factors Affecting Women's Career Achievement

Reference	Individual	Background	Education	Adult Lifestyle	Structural
Supported in empirical literature as enhancing women's career achievement Betz and Fitzgerald (1987)	high ability liberated sex-role values instrumentality androgynous personality high self-esteem strong academic self-concept	working mother supportive dad highly educated parents female role models adolescent work experience androgynous upbringing	higher education continuation in mathematics girls' schools/ women's colleges	late marriage few or no children	
Additional supportive factors hypothesized for ethnically diverse gifted women	biculturalism resilience determination persistence assertiveness racelessness	at least one supportive parent early identification early affirmation adult support early recognition of racial differences development of ethnic pride literacy environment	enriched K-12 schooling supportive teachers	supportive spouse	financial assistance civil rights women's rights affirmative action
Barriers for gifted women identified in the literature	fear of failure fear of success imposter phenomenon	(Card, et al, in Kerr, 1985: SES had little effect on bright women's realization of achievement potential)		integrating personal/ professional lives affiliation priorities	sexism others feeling threatened
Additional hypothesized barriers for ethnically diverse gifted women	perceived diffs. from peers peer pressure declining aspirations nonassertiveness	economic hardship	isolation	sense of responsibility to family/ community	racism definitions of merit

taining peer support; strategies for finding mentors and obtaining mentor support; and strategies for coping with role conflicts related to family/community/profession, structural and personal definitions of success, and cultural maintenance and assimilation.

Next Steps

Further research is required to investigate the factors hypothesized from the literature as influencing the achievement of gifted women from diverse backgrounds. The authors currently are directing a research project funded by the Women's Educational Equity Act to empirically identify factors that support or impede the development of gifted women from ethnically diverse backgrounds and to develop and disseminate recommendations for school personnel and parents for supporting the achievement of gifted ethnic girls. The method for investigation is a retrospective analysis of factors based on interviews of sixty prominent African-American, Asian-American, Hispanic, and Anglo women in the fields of higher education, business/industry, and government/law. Based on the findings, recommendations for supporting the needs of culturally diverse gifted girls will be developed.

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Gifted Females: They've Come a Long Way – Or Have They?

by Sally M. Reis and Carolyn M. Callahan

Headlines in a recent weekly news magazine proclaim that the gender gap on test scores is shrinking. "The notion that boys best their sisters in mathematics and that girls excel in language skills is a powerful stereotype and one that has seemingly been confirmed by results on standardized tests. But like so much of conventional wisdom, those notions may soon have to be abandoned" (Begly, 1988, p. 73). *Education Week* (1988) reported on the research of Linn and Hyde, who concluded that sex differences in verbal ability were insubstantial. The *Detroit Free Press* (Flanigan, 1988) and other periodicals (Zigli, 1985) have focused on the successes and barriers to success faced by professional women.

More attention has been given to the issues relating to the potential and achievements of gifted females in the last five years than in the previous four or five decades. This attention has not been limited to the education of the gifted. Articles on this specific topic and many related issues have appeared in popular daily newspapers, monthly magazines, and professional journals in other areas of education. In addition, a considerable body of literature on gender differences and the meanings of previously accepted definitions of terms, acceptable approaches to the study of gender differences and the meaning of prior findings has evolved in the psychology literature.

One might expect educators involved in working on behalf of gifted females to be pleased by the attention of the popular press and by findings such as those of Linn and Hyde, and Feingold (1988) which suggest fewer discrepancies between standardized test scores of males and females. However, before we become overly enthusiastic about these developments, it is important to look closely at the real implications and potential dangers of this attention. In fact, Chipman (1988) has noted that "the subject of sex differences in behavior and intellectual potential is far too sexy a topic, of much more interest than it should be," resulting in the reporting of any research regardless of the quality of the research or the real significance of results. Further, the reporting of even miniscule sex differences in cognitive functioning and personality often results in the translation of these results into categorical assumptions about individuals which belie the broad variation within each sex.

Second, the reports of such data as a shrinking of the gap between male and female scores on standardized tests may lead to unwarranted complacency. Take, for example, the current reports of research by Feingold (1988). Using the norms from the four standardizations of the Differential Aptitude Tests given between 1947 and 1980 and from the Preliminary Scholastic Aptitude Test, and the Scholastic Aptitude Tests given between1970 and 1983, he examined patterns of differences. He found that on tests of language, spelling, and clerical skills, girls still outperform boys by a small margin. Boys outperform girls on measures of spatial visualization, high school mathematics, and mechanical aptitude. In addition, according to this research, gender differences, except at the upper levels of performance in high school mathematics, have "declined precipitously over the years surveyed, and the increases in these differences [in high school mathematics] over the high school grades have diminished" (p. 95). Feingold found no gender differences on tests of verbal reasoning, arithmetic, and figural reasoning.

While some educators may consider this good news, a more careful analysis is necessary. Certainly, it is encouraging that overall differences are decreasing. Yet, early research by Terman included findings on the gifted population which were very similar to those which Feingold reports on the general population. In 1925, Terman stated, "There are only small sex differences in the subject-matter achievement of these gifted children, although the boys of 9 years and above are somewhat superior to the girls in arithmetic, while the girls of 10 and above are slightly superior to boys in language usage" (Terman and Oden, 1925, p. 293). But what happened to these females who were slightly superior to boys in language usage and especially those females who were deemed the most talented writers in

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the sample? When the Terman sample was examined in adulthood, nearly all the eminent writers were men. Only 48% of the gifted women in his longitudinal study were employed full-time in 1940, and 30.8% of that group were working as secretarial and clerical help (Terman and Oden, 1947). Fifteen years later, in 1955, half of the women were still housewives and only 42% held full-time jobs. Although such results are not unexpected given the times in which these women made college, career, and life decisions, it is evident that equal ability and achievement do not guarantee equal opportunity to achieve success and satisfaction with career choice.

Similarly, research over the past several decades has consistently demonstrated that females received higher grades than males throughout elementary school, high school, and college (Achenback, 1970; Coleman, 1951; and Davis, 9164). If grades attained by females have been consistently higher and if the gender gap between standardized test scores has been minimal in the past and continues to close, we might reasonably expect to see the performance gaps in careers, professional accomplishments, and consequent financial benefits also closing. This is simply not the case. Although now nearly half of the work force in the country is female and advertisements, television shows, and statistics of women entering graduate school all seem to indicate that females have come a long way since the 1950's, a more careful analysis of current statistics indicates that the struggle for equity has far to go. Why, for example, are less than 2% of American patentees women (Axelrod, 1988)? Why, when over 51% of the population of high school students are female and when Feingold (1988) demonstrates a disappearance of gender differences on the Preliminary Scholastic Aptitude Tests, are just 36% of this year's National Merit semifinalists female (Ordovensky, 1988)? Why are there only two females in the United States Senate, one female on the Supreme Court, and one female cabinet member? Why do women constitute less than 5% of the House of Representatives, own only 7% of all businesses in this country, constitute less than 2% of all school superintendents, 9% of all college and university presidents, comprise only 10% of all full professors at the college level, occupy only 5% of the executive positions of power in American corporations, hold none of the leading positions in the top five orchestras in the United States (including concertmaster, principal cello, bass or viola, oboe, clarinet, horn, trumpet, trombone, tuba, bass or percussion); represent only 4% of engineers, 13% of lawyers, 13% of doctors and 7% of architects? (Schaffer, 1986) Not only do women not achieve the level of recognition we might expect, but we also find that the fully employed woman who has graduated from college will earn, on the average, the same amount as a fully employed man with only a high school diploma (U.S. Bureau of the Census, 1985).

Of course, there are those who raise the concern that female accomplishmentbe measured not only in terms of career and professional success. As early as 1955 Melita Oden noted that:

> *There are many intangible kinds of accomplishment and success open to the housewife, and it is debatable whether the fact that a majority of gifted women prefer housewifery to more intellectual pursuits represents a net waste of brainpower. Although it is possible by means of rating scales to measure with fair accuracy the achievement of a scientist or a professional or a businessman, no one has yet devised a way to measure the contribution of a woman who makes her marriage a success, inspires her husband, and sends forth well-trained children into the world. (Terman and Oden, 1959, p. 145).*

There are many problems with simply assuming that gifted women really do prefer the traditional role of homemaker. The world has become a very different place for women. Although the contributions made by women in the role of wife and mother must not be denigrated, we must face some of the realities. Women now make up more than half of the work force; some by choice, but many because they must work to support themselves or their families. Yet it is clear from the above statistics that bright women are clearly adult underachievers.

The underachievement of adult women, then, is a totally different concept from the underachievement of younger women, for it defies measurement by the grades one achieves in school. We might consider it in comparison with male standards of profession, status, career-related accomplishments, satisfaction, and productivity, or it may be that we have to reexamine the concept of underachievement of bright women who do not achieve similar pro-

fessional accomplishments as their male counterparts (Reis, 1987, p. 184).

Evidence suggests that there is no reason that "successful professional" and "wife and mother" must be mutually exclusive categories. A recent study of marriage, motherhood, and research performance in science indicates that married women with children publish as much as their single colleagues do (Cole and Zucker-man, 1987). Many bright women choose alternatives other than homemaking or in combination with marriage and family, and many more will be forced to enter the world of work in the future. If we believe that each individual should have both the opportunity to develop full potential and to make choices about how best to achieve personal fulfillment, then we must seek better understanding of, and programs for, gifted females.

All of this suggests a reconsideration of what we must consider in creating a research agenda and in interpreting the finds on sex and gender differences (or nondifferences) as we plan curriculum and programs for the gifted. Among the first issues we must consider is the importance of sex differences and the importance of gender differences, and be very clear on the distinctions between the two. We define sex differences are those differences generally attributed to a biological basis; gender differences are a result of socially attributed categorizations. Our interpretations of the sources of sex or gender differences, the size and import of differences, and the degree to which these differences lead to differential performance are also of crucial importance. Some consideration of the potential bias in our research and practices based on the historical domination of men in the fields of psychology and education – particularly in academia – is also important.

What Does Current Analysis Tell Us Of the Differences Between Males and Females?

Hyde and Linn (1986) brought together a series of meta-analyses of studies relating to the psychology of gender differences. The meta-analysis of data relating to causal attributions of success and failure contradict the widely held beliefs about sex differences in attribution. Whitley, McHugh, and Freize (1986) concluded that the achievement attributions of males and females are very similar and, noting that the mean effect size was less than .2 standard deviations, concluded that those small significant differences which were found are really quite meaningless. They further concluded that men are a bit more likely to attribute both success *and* failure to ability. Becker's (1986) meta-analysis of the dimension of susceptibility to influence led her to the conclusion that differences in influencibility were of very small magnitude.

Linn and Peterson (1986) examined underlying differences to explain the undisputed sex differences in occupational choice—the lower representation of women in mathematical, scientific, and technical occupations. First they point out that spatial ability has been the "cognitive ability of choice" among those trying to explain these sex differences, despite the lack of evidence that spatial ability – independent of general ability – is related to science or math achievement. Then they note that spatial ability is not, in fact, a unitary concept and point out that the definition and type of instrument used has great influence on whether or not sex differences are identified. Finally, they conclude that on traditional tests normally thought to measure spatial ability very small sex differences are found; that larger differences are found on a task calling for mental rotation of block forms. Yet, they argue that even those findings do not warrant conclusions that spatial abilities account for differences in adult achievements in mathematics and science.

Chipman (1981) in her review of these studies of sex and gender differences suggests that the important issues are no longer whether or not there are sex differences. Pointing out the infrequency with which these differences are identified, the relative lack of predictability from those that are identified (estimates of variability in adult achievement accounted for by these statistically significant abilities ranged from a low of 1% to a high of 5% (Hyde, 1981), she suggests that research needs to be reoriented toward potentially more productive questions.

The focus of research in these areas now needs to address factors that mediate gender differences in achievement and variables which can be manipulated in the environment in order to ensure that females' development is not inhibited and choices are not foreclosed. Further, the time has come to examine the individual differences within girls to determine those characteristics likely to be influenced by the environment and those experiences and conditions conducive to full development of potential.

More Promising Research Directions

Although research related to gifted females is more prevalent than it was a decade ago, it is not necessarily aimed at answering the questions raised above. We must recognize that "underlying the problems of achievement and motivation of gifted and talented females lie hypotheses yet to be tested and perhaps untestable in the experimental tradition" (Callahan, 1979, p. 412). Even though we cannot expect to control environments in which children are raised nor can we expect to radically alter our society within the next few years, there are means through which many of these questions have and can be addressed.

For example, in considering the differences in interest in math and science, Eccles (1987) points out that it is more profitable and important to look at internal comparisons made by girls as they engage in decision-making rather than comparing boys to girls. She points out that, after all, when we make decisions we ask ourselves what we are better at doing and what we value rather than asking if we are better than others or value something more than others. Accordingly, she examined the degree to which young women felt they were more or less capable in math and English over time and the degree to which they valued these disciplines. Eccles notes that it is not sufficient to simply describe these differences. We must also look for factors which may influence these differences and distinguish females who choose to continue to select math and science courses and careers from those who do not.

Asking the question, "What goes on in math and science classes which may affect the confidence of these girls and their values," she draws several conclusions from the extant literature on math and science teachers who have been successful in keeping females interested in mathematics and science. She notes a pattern of conditions which distinguish these classrooms:

- frequent use of cooperative learning opportunities,
- frequent individualized learning opportunities,
- use of practical problem in assignments,
- frequent use of hands-on opportunities,
- active career and educational guidance,
- infrequent use of competitive motivational strategies,
- frequent activities oriented toward broadening views of mathematics and physical sciences – presenting mathematics as a tool in solving problems,
- frequent use of strategies to ensure full class participation.

As she points out, these factors counteract out-of-classroom pressures and influences on females. She further suggests other aspects of our society that seem to influence the differential achievement of males and females. She supports the need to examine these factors and to develop means to counteract the effects.

For example, strong stereotypes exist in our society regarding natural talent and who has it. Achievement in math and science are more often linked to innate abilities than is achievement in any other disciplines. Further, our culture subscribes to an assumption that males are more likely to have those innate abilities. In other cultures, success in math and science are attributed to degree of effort put forth. Failure is attributed to lack of effort rather than lack of ability. Exploring this possible ethnic difference, Brandon, Newton, and Hammond (1987) examined mathematics achievement across four ethnic groups in four grades in Hawaii. Not only did they find that high-achieving girls outperformed high-achieving boys, with these differences increasing across grades; they found that the sex differences favoring girls among Caucasian students to be less than those among Japanese-American, Filipino-American, and Hawaiian students. The authors of the study conclude that "the cultural factors accounting for superiority of Caucasian boys over Caucasian girls in mainland United States might be influencing Caucasians in Hawaii" (p. 458). They further suggest that the data strongly support the consideration of the socio-cultural factor in any study of sex differences in mathematics achievement. This also suggests many socio-cultural factors which must be considered in designing studies to identify influences which impede female achievement and effective strategies for countering those influences.

Another factor identified by Eccles and her colleagues is parental expectations. Parsons et al (1982) conducted a study of the effect that parental beliefs and expectations have on their children. First, the sex of the child had a significant effect on the parents' assessments of the child's ability in mathematics. Although the boys and girls had performed equally well in math the previous year, as well as on a recent math test, parents of daughters believed their

daughters had to exert more effort to do well in math than did the parents of sons. Perhaps more significant is the finding that the children's beliefs about their abilities in math were more strongly influenced by their parents' expectations than by their own past performance.

Eccles reported, in 1984, that even when girls and boys were both earning A's in math and English, girls were considered by their parents to be better in English and boys to be better in math. Even when girls had higher grades, higher standardized test scores, and higher teacher ratings in math, parents believed that math was harder for girls than for boys. In 1986 she found that parents rated advanced math courses as less important and English and history as more important for their daughters than for their sons. In addition, these young girls had lower confidence in their math abilities than in their English abilities and, as we might expect, lower expectations for future success in math.

Further, building on the findings that career choices are based on stereotypes of occupations, values attached to occupations, and perceptions of the degree to which ability and effort relate to success in the field, she found that young women attributed success in traditionally female careers as due to ability and success in male-stereotyped occupations as attributable to hard work and luck, with male occupations perceived as considerably more difficult. Women who did choose to enter male-dominated fields attributed success in those fields to ability and other stable, internal characteristics. These women also rated the value of math higher than did those who chose other occupations. Farmer (1985) also studied the aspirations and motivation of young women and found that high aspiration is influenced most by perceived support for women working in the field and by teacher support. She also found the effect of environment was much stronger for females than males. These research avenues begin to suggest patterns for understanding differences in adult achievement and means of addressing those differences.

Subotnik (1988) has also completed research on science and math achievement. In an examination of the attitudinal variables characterizing students who have achieved success in science (146 winners of the 1983 Westinghouse Talent Search), she found that female subjects "...reported more concern with social impacts of scientific research, less variability in their self-image as a scientist, and a tendency to attribute success to hard work and dedication rather than intelligence or creativity than did male subjects..." (p. 19). The relationships between these perceptions, the perceptions of those who ultimately enter and succeed in these fields, and the factors that mediate that success are still unanswered research questions.

Another line of research on the kinds of environmental conditions that influence achievement questioned the biological or innate ability explanations for sex differences in mathematical performance of the SAT (Pallas and Alexander, 1983). Increasing the number of courses taken by females in advanced math courses related to decreased differences in the performance of males and females on the SAT, suggesting that experience and socialization have an impact on this performance and a need for research on those factors which can be controlled by the school experience.

To some degree this issue has been addressed. We have seen an increase in the number of mathematics and science courses taken by females at the high school level. However, there is a danger of regarding this as indication of changes which may or may not have occurred. That is, there is a danger that increased enrollment in mathematics and science will give us a false sense that fundamental values, attitudes, and achievement aspirations are really changing, when what we really are observing is an artifact of increased requirements for graduation resulting from the educational reform movement. In other words, data that indicates that females are enrolling in more high school math and science courses may be true, but misleading and falsely encouraging information.

Increased course enrollment may reflect nothing more than state and local requirements for earning honors or academic or other special diplomas. It is certainly encouraging to hypothesize that a full spectrum of course-taking in mathematics and science courses will counter the trend of sex stereotyping and lessen the chance that females will restrict future options through failure to take these courses. But the fundamental question remains unanswered. Have these young women developed interests, values, skills, and attitudes (toward their own abilities and toward these disciplines) that are

likely to result in the continued pursuit of courses and careers in mathematics and science? Are parents, teachers, and counselors truly encouraging the additional course-taking with a clear message that such courses are important and that young women can be successful in these classes which form the basis for *continued pursuit* of math- and science-related careers? Or is the message one of, "Just take this math and you will get a governor's diploma," or, "You need to take this to get into the right college, but then you will never have to take another course like this," or, "Don't worry, you don't really need this course in the future. It's just a high school requirement."

Not only are the patterns of math and science course-taking and attitudes toward these subjects crucial for the rest of this decade and the next, but the emerging use of computers as an essential tool in nearly all disciplines makes the study of the impact of instruction and media on females another area of critical concern. Sanders and Stone (1986) report that males outnumber females 3 to 1 in computer camps and the sex difference is even greater in the more expensive camps, suggesting that parents are willing to spend more on males. *The Washington Post* (1986) reported that the computer industry estimates that women purchase fewer that 10% of personal computers and *PC World* reported that more than 80% of subscribers are male. The *Post* also reported that an executive of a major computer company reported that 98% of their market is male and said, "We do not feel that women represent any great untapped market."

A third essential type of research which is needed is longitudinal studies of gifted females. Of particular importance is the need to identify those critical times at which various blocks to achievement are likely to occur, means of identifying those influenced by those barriers, and the short- and long-term impact of intervention programs.

An excellent example of this type of research is being completed by Arnold and Denny (1985) who are now in the seventh year of a study of male and female high school valedictorians and salutatorians. Emerging gender differences caused them to hypothesize that society may be losing the talent of some of our brightest young women. They discovered women's estimates of their intelligence lowering between high school and their sophomore year in college as compared to their male counterparts. These women also had lower career aspirations and less ambitious goals as sophomores than when they graduated from high school. This finding is consistent with previous research demonstrating an increased incidence of underachievement for bright females in college and after the completion of education (Bayley and Oden, 1955; Maccoby and Jacklin, 1974). This phenomenon, coupled with findings that female career aspirations were moving away from medicine, has led them to explore the effects of concerns raised about merging family and career on overall career aspirations.

Other longitudinal research conducted on females who participate in a gifted program in which counseling and other interventions (female role models and an infusion into the curriculum of female accomplishments in a variety of areas) are provided from elementary through high school is in progress (Reis, in press). Results from this research suggest that female participation in advanced mathematics and science classes can be successfully increased through such intervention. It further documents that the products completed by males and females across grade levels do not differ significantly in quality and that equivalent numbers of males and females initiate advanced-level work when given the opportunity (Reis, 1981).

Final Words

In considering the research that still needs to be done, we must begin to frame that work within the context of a sound theoretical framework of development of gifted women. The study of abilities, attitudes, and values without any theoretical framework or empirical evidence of the relationship between those differences and achievement must be avoided. For example, of what value is the discovery of sex differences in an ability, such as mental rotation ability, when we do not understand the significance of that ability in mathematics learning? Further, our research should be designed to allow for maximum understanding of the processes of learning and development in order that all individuals have the maximum choice in career and life decisions. This research on learning and development of gifted females should provide direction for translating theory into practice in appropriate educational strategies to enable these young people to realize their potential.

Most important, we must not allow the findings of sex or gender differences to lull us into categorization or stereotyping of any individual. To find that males and females differ on a variable as a group is not a basis to assume that all males share more or less of a given characteristic, while all females are on the opposite end of the continuum on that same characteristic.

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Living out the Promise of High Potential: Perceptions of 100 Gifted Women

by Kathleen D. Noble

Many issues are relevant to human growth and development, but the study of the gifted has special significance. From this population our cultural, political, educational, and spiritual leadership has historically arisen. To date, however, very little attention has been paid to the emotional and social development of the gifted in general, and of women in particular. We know little about gifted women's psychological development and needs, the unique problems they encounter in their personal and professional lives, and the costs to themselves and society of not having their marked abilities recognized and nurtured.

What little data exist suggest that at the elementary school level, at least one-half of all children *identified* as gifted/talented/highly capable are girls; by junior high school, less than one-fourth are still so identified (Clark, 1983; Silverman, 1986). By adulthood, it is likely that the majority of gifted women will settle for far less than their full potential, while most of their male peers will go on to positions of leadership in education, science, industry, the arts, and other sectors of society (Kerr, 1985).

The role of sexism in obscuring the recognition and expression of giftedness in women is irrefutable. Our society has a long-standing history of ambivalence toward highly capable women, and over time many women internalize that ambivalence.

Being female means that even if she gets A's, her career will not be as important as that of a boy who gets B's. Being female means that *she* is not important, except in her relationships to boys and men. Being female also means being given ambivalent messages. Parents and teachers rarely will tell a girl that she is less important than her brothers and other boys...The message of her inferiority will be communicated in more subtle ways: by a lack of concern, by failure to fully nurture her potential for growth and development, by not expecting her to succeed at difficult tasks. And because the messages are mixed, a woman may feel that her mother's, father's, or teacher's lack of attention to her stems from some specific failing of her own. Internalizing the voices of her oppressors, the currents of her feelings of inferiority and self-hatred run strong and deep (Christ, 1980, p. 15).

Even when women do succeed in taking themselves seriously, many find that they have only a limited range of options through which to express their abilities. As a culture, we acknowledge and reward only those talents and abilities that have direct, marketable value, and what has value has largely been determined by and for men. We tend, therefore, to dismiss "gifts" that aren't rewarded materially or that aren't technologically oriented, and we discount those that are stereotypically "female" – the ability to love, to understand, to empathize, to be compassionate, to be altruistic, to cope, to survive, and to live life with grace, integrity, and authenticity. Yet, by failing to appreciate the value of these abilities in ourselves and others, we perpetuate a misogynistic and constricting conception of giftedness. This is an important and complex issue, but beyond the scope of this paper. Readers are referred to Getzels and Dillon (1973) and Gilligan (1982) for further elaboration.

Clark (1983, p. 356) questions whether the "secure, self-sufficient, successful, self-actualizing gifted woman is commonly found in and supported by our society." Certainly social support is generally lacking, but I don't believe the gifted woman is not "commonly found." Rather, I believe that a significant part of the problem lies in our reluctance or inability to recognize giftedness in women, and that part of the solution lies in teaching women to recognize, accept, and nurture giftedness in themselves and each other.

This paper will address three primary issues. First, it will present an overview of the current literature relating to the psychological, social, cultural, and cognitive issues confronting gifted women as they strive to develop their potential. Woven into that discussion will be data gleaned from a 1986 pilot study of the lives of 100 contemporary adult gifted women residing in the Pacific Northwest region of the United States. Second, it will suggest the kinds

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of psychological interventions which would enable psychologists and educators to maximize the development and achievement of highly capable women. Third, it will pose some research directions which would add substantially to our knowledge base. Before addressing these issues, however, a brief description of the subjects and setting of the aforementioned pilot study will be offered.

Women of High Potential: Participant Characteristics

The first "Women of High Potential" conference was held at the University of Washington in September, 1986. This conference was organized around three primary goals: (a) to provide a forum within which highly capable women from different age groups, ethnic background, occupations, and areas of interest could explore the meaning and impact of giftedness in their lives, (b) to enhance their understanding of how giftedness could be nurtured or inhibited in self and others, and (c) to offer an opportunity for participants to interact with other gifted women for support, mentoring, and the creation of opportunities for personal and professional growth. The conference also enabled its organizers to gather information about participants' perceptions of the joys and challenges of their giftedness, and to build a platform for further research.

Of the 142 women who attended the conference, 109 chose to complete a lengthy questionnaire. The questionnaire was designed to corroborate and amplify current research findings by specifically asking participants about the presence in their lives of issues which appear to confront other gifted women (Noble, 1987). The questions were posed in the form of checklists, Likert-scale response choices, and open-ended questions from which were derived categories for quantitative and qualitative analysis.

Who were these women? Their average age was 39, but respondents ranged from 19 to 79 years of age. They were predominantly Caucasian (93%). Half were married or living with a partner, 20% had never married, and 20% were divorced. A few of the women were widowed, and slightly over half were parents. Most (87%) had graduated from college, although only one-third of their mothers and one-fifth of their fathers had done so. Almost two-thirds (60%) attended or currently attend graduate school, and the overwhelming majority (97%) were working outside the home in professional, technical, or managerial positions (77%).

Unfortunately, only a small number of minority women attended the conference, and most participants were well-educated and well-employed, thus, our group was not representative of the multicultural urban environment in which the conference took place. The conference organizers experienced difficulties in reaching women who are ethnic minorities and those who are less aware or unaware of their level of ability, such as university secretaries, women in rural communities, culturally/economically disadvantaged women, and homemakers. Future conferences and research projects will attempt to involve more women from underrepresented groups.

It was interesting to the organizers that approximately 60% of the respondents had been identified as "gifted," "talented," or "highly capable" at some time in their lives, usually between the ages of 5 and 15. Although most (83%) felt they were gifted or possessed high potential, the rest weren't sure. Yet some of the comments of those who perceived themselves as gifted were highly revealing, and I believe poignantly introduce some of the issues which confront highly capable women:

I have always done well, been at the top of the class, skipped 6th grade, succeeded in college and in my work, but still tend to see my limitations rather than my 'gifts.' Just last year – age 41 – I realized that I might be very gifted. And it is hard to say that – even anonymously and on paper.

I always knew I was different but didn't label it until this conference.

I was identified at age 10, but 36 is the age at which I seriously took this information and made it mine.

Issues Confronting Gifted Women

It is evident that men have been more prominent and more numerous in areas of high achievement, but they have been so by reason of differing opportunities rather than differing abilities. In any case, the issue is not the relative superiority of men or women, but the neglect of talent among those of the female population

who are, in fact, gifted or may be found to be so (Getzels and Dillon, 1973, p. 712).

Although there is a dearth of literature related to giftedness in women, some patterns and trends have been identified and will be discussed in this section.

Personality Correlators

Several researchers have found that gifted women score more like males than women not identified as gifted on measures of self-concept, interests, values, and personality (Callahan, 1980; Mills, 1980; Solano, 1983; Wells, Peltier, and Glickauf-Hughes, 1982). From an early age, they appear to be more achievement oriented, more interested in nontraditional professions, more rebellious against sex role stereotyping, and more rejecting of outside influences that hinder their development than are their female peers of lesser ability. They also appear to be more androgynous, to have higher self-esteem, and to show a great deal of persistence in the face of adversity (Blaubergs, 1978; Hollinger, 1983).

The conference data certainly supported this sense of persistence. The majority (60%) of our group, when asked how they coped with a variety of obstacles to the development of their abilities, described strategies that invoked problem-solving and planning ways out of or around the obstacles. A minuscule number of respondents said they had given up or consciously compromised themselves.

The appearance of psychological androgyny does not imply that gifted women are more "masculine" than other women; rather, they seem to combine the characteristics, values, attitudes, feelings, goals, and expectations of both sexes. For example, like other women, they feel strongly compelled to nurture, care deeply about relationships and family life, and experience difficulties placing their own needs above those of others (Rodenstein and Glickauf-Hughes, 1977; Silverman, 1986).

Again, our data agreed with these findings. When asked to elucidate the major sources of joy in their lives, 48% described relationships with family, 42% described work and personal accomplishments, and 41% said their relationships with friends were highly significant. But for more than one-third of our respondents, conflicting demands of home and family had led to a change in career aspirations in adulthood and was currently influencing the development of their potential.

Social Pressures

Many studies suggest that, unlike gifted males and females not identified as gifted, almost all gifted women have found it necessary at some time in their lives to hide their abilities in order to survive socially. Several factors contribute to this.

First, cultural ambivalence toward female independence takes its toll on the ranks of gifted women. The majority of these women are gradually conditioned by the educational system and by parents to view themselves as less capable than males, and are socialized to be passive, to avoid taking risks, to hold lower expectations for success and to eventually discount their own skills and accomplishments (Blaubergs, 1980; Fox, 1981; Hollinger and Fleming, 1984; Whitmore, 1980). Further, male and female teachers appear to like gifted males better, consider them more capable, and negatively perceive qualities in gifted females that they positively perceive in males, such as analytical skills, originality, and nontraditional approaches to learning and problem-solving (Blaubergs, 1980; Cooley, Chauvin, and Korner, 1984; Fox, 1981). One-third of our subjects had been discouraged by both parents during childhood and adolescence from developing their abilities, while 20% felt that they were discouraged by both male and female teachers. One-fourth indicated that they had to change their career aspirations as children because of parental disapproval.

Second, the preadolescent peer group tends to reject a girl who appears to be too smart or too successful, and this trend does not appear to reverse itself over time except in certain highly selective environments such as all-female high schools or colleges (Tidball and Kistiakowsky, 1976). Consequently, gifted females often feel they must choose between developing their abilities and being rejected socially or considered "unfeminine" (Callahan, 1980; Fox, 1979; Schwartz, 1976). While 75% of our respondents said they had had to hide their abilities at some time from *both* males and other females in order to be accepted, 66% had experienced some kind of social rejection from males for being bright. A third of our sample (35%) felt they had been discouraged from developing their potential in adulthood by spouses or partners, and 25% had changed their career aspirations because of this disapproval.

Third, gifted females frequently encounter hostility toward their abilities, not only in com-

munities which devalue intellectual gifts in women, but also in settings which tacitly support both traditional and non-traditional aspirations in women (Fox, 1981; Kirschenbaum, 1980; Silverman, 1986). Unfortunately, we do not know how often this hostility takes the form of violence against women. To my knowledge, no investigation has yet explored the representation of gifted females among populations of sexually, physically, and/or emotionally abused women and girls. Yet, as Whitmore (1980) observed, there is a definite tendency among children and adults to punish and reject the person who is different. Such treatment will undoubtedly obscure the expression of giftedness in some women and compromise others' ability to take their gifts seriously and cultivate them assiduously.

Cultural Expectations

Roeper (1978) observed that the real milestone in the history of the gifted female was the advent of the women's movement, because doors were finally opened to women that had previously been closed. It is true that women have made progress over the past twenty years, and that more women have access to more educational and employment opportunities than ever before. But mainstream culture changes more slowly than many of us would wish, and despite these new opportunities, gender-role stereotyping and the strength of traditional values systems frequently burden gifted women with what has been described by Rodenstein, Pfleger, and Colangelo (1977) as a classic double bind. That is, the traditional behavioral expectations for gifted individuals and women are often inconsistent and mutually exclusive. For example, gifted students are usually expected to succeed in traditionally male-dominated fields such as science, math, law, medicine, and business. Yet gifted females are generally not encouraged and are frequently discouraged from studying science and math, and gender-role stereotyping still affects the number of options females perceive as acceptable and attainable. We found that over 50% of our respondents were *not* encouraged to enter math/science careers, and only one-third had been encouraged to take math and science courses in junior and senior high school. Further, more than one-third of our sample had changed their career aspirations in childhood or adolescence because of gender-role socialization, although in adulthood the conflicting demands of home and family were perceived as equally damaging to career aspirations and the development of potential. Of course, sensitivity to these demands can readily be viewed as another manifestation of gender-role socialization.

When women do enter nontraditional fields, as did Barbara McClintock, a brilliant scientist whose life work in cytogenetics is revolutionizing the field of molecular biology (Keller, 1983), many have no role models, mentors, support systems, or traditions for dealing with these new opportunities. Further, women are still expected to be less intelligent, to earn less and be less educated than their male partners, and to interrupt their careers when demands of their mates and/or children interfere (Blaubergs, 1980; Cox and Daniel, 1983; Fox, 1983; Higham and Navarre, 1984, Schwartz, 1980).

For some gifted women, the consequences of dealing with this double bind can be fatal. Russo, Miller, and Vitaliano (1985) estimate that the rate of suicide and morbidity among female physicians and medical students, for example, although similar to that of male physicians, medical students, and males in the general population, is *three times* that of females in the general population. "They have greater accessibility to lethal means of suicide... females have difficulty integrating their traditional roles with those of the physician; they encounter hostility in a traditionally male-oriented environment; and they lack mentors and support" (p. 118).

Finally, it is important to note that racial discrimination was perceived to be a major and current obstacle for all the minority women who attended the "Women of Higher Potential" conference, and all these women felt they had had to change their career aspirations throughout their lives because of it. The fact that knowledge about the particular difficulties encountered by gifted women who are members of ethnic minority groups is virtually nonexistent makes it critical that we attend to this issue in future research efforts.

Cognitive Styles

Another factor contributing to the psychological discouragement experienced by gifted women is lack of self-confidence. Many studies have demonstrated women's tendency to internalize responsibility for perceived failure or lack of opportunity (Covington and Omelic,

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1979; Dweck and Licht, 1980), while men tend to attribute success to ability, and failure or disappointment to "chance" or an external factor. Our data supported this tendency with 50% of our respondents citing lack of self-confidence as the *major* reason for changing their career aspirations throughout their life cycle, and as the *primary* obstacle inhibiting the development of their potential. Certainly respondents perceived external factors such as gender discrimination, the demands and/or disapproval of parents/teachers/significant others, economic hardship, and lack of adequate training or education as contributing to their difficulties in cultivating their abilities. But none of these factors approached the strength of lack of self-confidence as a destructive force in these women's lives.

Gifted women are often handicapped by their tendency to view mediocrity in any area as a loss of self-esteem, and the turning down of an opportunity as a loss of potential and consequently, a personal failure (Silverman, 1986). To corroborate Silverman's observation, we asked our sample to respond to the statement "I feel that not taking advantage of every opportunity is a personal failure" and found it to be true for almost half (43%) of the 109 subjects.

Many gifted women also experience a profound sense of inadequacy which frequently manifests as an "impostor" mentality, characterized by a pervasive anxiety that one's facade of competence will eventually be discovered, resulting in failure and humiliation. Among our sample, for example, 34% felt they were less capable than others perceived them to be. Eventually these perceptions will lead to a crippling or paralysis of exceptional ability. The result of struggling with cultural confusion about what is and is not appropriate for gifted women can be underachievement, underemployment, chronic dissatisfaction with one's life, depression, anxiety, illness, eating disorders, perfectionism, isolation, and the exhaustion of the superwoman syndrome.

These issues are certainly alive for most women, but gifted women are affected much more powerfully and deleteriously because of their "enormous awareness of the complexities and dangers of the world" (Roeper, 1978, p. 7). Although Garmezy and Tellegen (1984) have argued that intelligence serves as a major protective factor for individuals in coping with adversity and life stressors of varying intensity, gender-role socialization mitigates much of this protection for gifted women. Exceptional cognitive ability is frequently accompanied by increased capacities for empathy, differentiated feelings, and relatedness, leading to an enhanced identification with and responsiveness to the expectations of others. When these latter include (as they usually do) the need for women to be dependent, to place attachment to others above attachment to self, to avoid entering a challenging world and competing with men, and to substitute protection from others for realization of potential, it is no wonder that so few women reach maturity with their giftedness intact.

Directions for Prevention, Intervention, and Future Research

Higham and Navarre (1984) and Fox (1981) suggest several factors which are productive of a high level of adult achievement in all people. These include: (a) a secure emotional base, (b) warm, nurturing parents who encourage exploration, (c) parent and teacher encouragement of independent thinking, independent behavior, and tolerance for change, and (d) role model identification, self-acceptance, early success experiences, and self-confidence. Certainly, many gifted women do not grow up in such ideal environments. But psychologists and educators can help to create a climate conducive to the development of superior ability in women by implementing some of the following suggestions:

1. *Psychological education* must be available to gifted females from a very early age to help them make life-style choices, specifically in regard to career and family. Young gifted women particularly need help in dispelling three self-defeating myths: (a) that a choice between having a career and a family is always necessary, (b) that career and life-style planning is irreversible, and (c) that choosing the single life-style will inevitably lead to discontent and dissatisfaction with one's life (Rodenstein and Glickauf-Hughes, 1977). Further, gifted women need to learn that it may not be possible or desirable to live up to the "superwoman" ethos, and that choosing a life-style may involve making some difficult compromises and trade-offs.

When we asked the women in our study to identify the major sources of stress in their lives, a familiar theme emerged: that of achiev-

ing balance among work, relationships, and self; of having sufficient time to develop both the intrapersonal and interpersonal dimensions of high potential. In addition, for almost 50% of our sample, family, work, relationships, and leisure provided roughly equivalent sources of significant joy; thus, achieving balance among all these competing forces is necessary to many respondents' sense of well-being.

But most of us experience great difficulty in arriving at such equilibrium. All women are expected to assume burdens not assumed by most men, but gifted women often find themselves acting as pioneers in their personal and professional lives. How do we cope with such an arduous and often lonely task? I believe we must continually remind ourselves and each other that the challenges we face are universal, sometimes internal and always external, that we must learn to expect less of ourselves in terms of taking care of others' needs to the detriment of our own, and demand more of our partners and our society as a matter of course. I also believe we must not support the current "superwoman" ethos, that we must not accept the exhaustion of our bodies, minds, and spirits as the price we must pay for developing and utilizing our gifts.

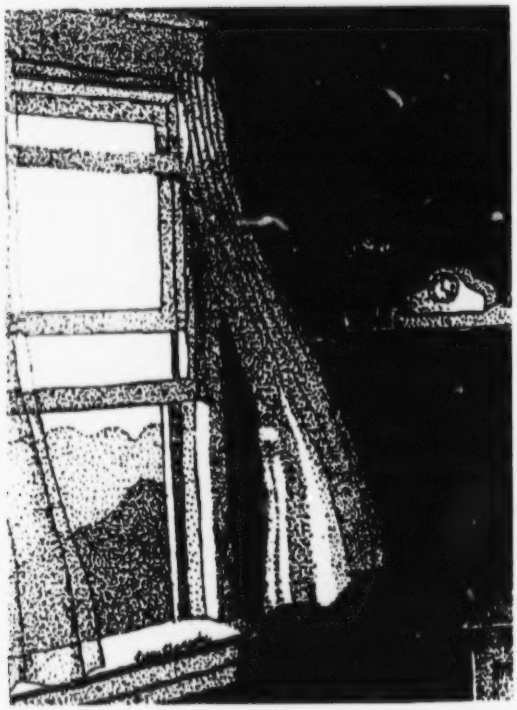
2. *Feminist-oriented psychotherapy* to assist gifted women of all ages to develop autonomy, independence, psychological stability, assertiveness, self-confidence, positive self-image, self-esteem, and a sense of social competence is vitally important. Gifted women frequently need help in unlearning a fear of creativity, building confidence in and gaining acceptance for their creative abilities (Schwartz, 1977). Our study further suggests that self-confidence is a crucial dimension to explore, and that psychotherapy should assist gifted women to perceive themselves as gifted, to recognize the toll that environmental discrimination has taken on their self-confidence, and to externalize factors such as discrimination and socialization rather than internalize them as "lack of ability." In addition, gifted women must understand that their perception of their own ability is an essential dimension to explore because their self-perception is usually much lower than their actual level of ability (Hollinger, 1983). We must also keep abreast of research in sex differences in order to assist our clients to understand the prevalence of attitudes and stereotyping that are detrimental to the fullest expression of their abilities. As Navarre (1980) discovered, awareness can greatly reduce the negative impact of sexism on women's willingness to develop and display their gift.

3. *Career counseling* can assist gifted women in planning a life-style which allows for the achievement of leadership status within a career, as well as developing the ability to understand and work with multipotentiality (Rodenstein et al, 1977). Gifted women frequently have the ability to be successful in so many areas and activities that they have difficulty choosing a direction or focus for their lives. We specifically asked women in our study whether they had felt they had more than one option in choosing their life work and 83% said they had. More than half of these respondents said it was very hard to choose what to do. And 94% felt they had the ability to succeed in a variety of areas ranging from academics to engineering to community organization. Yet many interpreted their multipotentiality as evidence of confusion, indecisiveness, or "being scattered" rather than as strength. Encouragement to reframe multiple interests and skills in a more positive light is clearly needed.

Secondary school counselors and college advisors should also make a special effort to alert women students to undergraduate and graduate level scholarship, grant, and fellowship information. As one of the respondents in our study explained, "much of the privilege of high potential recognition and development lies in the ability to pay for nurturance of that development — in time, in attention, and in education." But for many gifted women, money is a barrier to higher education, and "the effects of socioeconomic status on educational attainment are greater for girls than for boys" (Jensen and Hovey, 1982, p. 153).

4. *Specific math/science course and career counseling* should be available throughout a woman's elementary and secondary school career. Gifted females, like their less able peers, are still largely socialized into traditionally female, low-paying occupations. Without adequate preparation in math and science, many will not be able to participate in a socioeconomic system that increasingly demands those skills (Higham and Navarre, 1984). Access to such course work, however, may not be enough. As many investigators have discovered (Blaubergs, 1980; Cooley, Chauvin, and Karnes, 1984; Fox, 1981; Rodenstein, Pfleger, and Colangelo, 1977), many gifted girls are unlikely to receive sufficient academic prepara-

Student Art Work
Kerry Kennedy
Los Osos Middle School



tion or counseling at the K-12 level, because many teachers believe male students are inherently better at those subjects, and many counselors do not perceive careers in scientific or technological fields as appropriate for females.

We found that one-third of our sample had been encouraged to consider math or science careers by their junior and senior high school teachers, and only one-third were encouraged to take math or science course work during those years of study. Given that our respondents clustered around the 35 to 43 year-old age group, we hope that these percentages have increased substantially for contemporary adolescent women. Certainly there has been an explosion in recent years of programs for adolescent women to expand their knowledge of and interest in scientific and technological careers, and efforts of teachers, counselors, community colleges, and organizations such as the Association for Women in Science. These efforts must continue if gifted girls are not to jeopardize their future options by neglecting adequate preparation in math and science.

5. *Role models and mentors* are crucial, if for no other reason than that "no child will choose a career that she does not know about or cannot identify with" (Higham and Navarre, 1984, p. 52). Gifted women are exposed to fewer same-sex role models than are their male counterparts in daily life, literature, the arts, and the media, and sex role stereotyping is still the rule rather than the exception in educational materials. Opportunities to interact with role models and mentors can significantly enhance a gifted woman's acceptance of her own abilities and career possibilities (Fox and Richmond, 1983; Navarre, 1980, Schwartz, 1980).

When we asked our sample to identify the most significant events in their lives in terms of developing their potential, 60% reported that support and encouragement, principally by teachers and mentors, were the most important factors. All of us who have come to recognize and accept our level of ability must be willing to serve as role models for our students, clients, friends, daughters, and support staff if we sincerely hope to increase the number of gifted women who dare to develop themselves.

6. *Coping in the workplace* is another area which needs to be addressed by psychologists and educators, role models, and mentors. Many gifted women have had the experience of working for or under the supervision of individuals who are less bright or competent than they, or for someone who is threatened by their competence and intelligence. We asked our respondents whether they felt that males or females in positions of authority were threatened by women who are bright/competent: 75% believed men were threatened and 75% had experienced this; 59% both thought and experienced women to be threatened. Further, almost half our sample believed they were more capable than others perceived them to be. The long-term effects of underemployment and underutilization of talent can be devastating for all people, but particularly for those who are gifted. I believe we must strive not only to increase the availability of challenging opportunities for women, but to help them develop the psychological strength to persevere in the face of centuries-old devaluation of women's abilities.

7. *Psychologists and counselors* must be aware of their own expectations, attitudes and behaviors toward gifted girls and women. We must remember that we are products of a culture that has a history of ambivalence toward recognizing or addressing the special needs of the gifted. Some of the ambivalence stems from a fear of creating a caste system, an intellectual elite who will denigrate others who are less able. Another part arises from a fear that recognizing high potential or ability will place

an individual, especially a child, in a high-pressure situation which might compromise her or his personal development. But an even stronger component is the belief that special attention need not be paid the gifted because they will develop satisfactorily and self-sufficiently without it. *This belief is false.* The gifted person will not succeed against all odds, especially if she is female. In fact, without counseling and educational interventions aimed specifically at the challenge of being both gifted and female, the majority of gifted women will continue to disappear (Shakeshaft and Palmieri, 1978).

8. *Women psychologists and counselors* must also become more aware of their own abilities so that they can better nurture the high abilities of their clients (Silverman, in press). Silverman observed that "many feminist therapists are gifted women who do not recognize their own giftedness, and their clientele is frequently composed of unrecognized gifted women" (L.K. Silverman, personal communication, February, 1987). In our study, 20% of the respondents identified therapy or counseling as an avenue of coping for them. We don't know how many respondents had ever sought counseling or how many of their therapists perceived their own or their clients' giftedness, but these are questions worthy of investigation. If we fail to see ourselves in the fullness of our abilities, we cannot see the gifts in others nor empower them to reach their potential.

9. *Psychology training programs* must incorporate specialized course work and training opportunities in gifted psychology. As Silverman (1983, p. 2) observed, "few teachers, counselors, psychologists, or even specialists working with the gifted recognize that the gifted have a unique set of affective needs." Counseling the gifted is a complex activity for which few are or will be adequately prepared unless a body of knowledge based on research is introduced into psychology preparation programs.

10. *The popularity and availability of support groups* for dealing with a vast array of issues and challenges attest to their efficacy in helping people to manage their lives more effectively. For school-aged and adult gifted women, a supportive peer network can provide a means of exploring changing life roles, values, methods of conflict resolution, and strategies for dealing with situations that arise from sex role stereotyping (Navarre, 1980). According to Blaubergs (1980), the problem is pervasive but remediable. "Many parents, teachers, and counselors of the gifted continue to reflect attitudes and sex stereotypes that are detrimental to the expression of the abilities of gifted girls. An understanding of the prevalence of such attitudes and an awareness that they do not reflect a necessary reality, or often any reality at all, can help to remove this barrier to the gifted girl's achievement."

11. *Family counseling and parent education programs* are necessary, since families tend to underestimate or ignore the abilities of gifted daughters. One-third of our sample said they had been discouraged by both parents during their formative childhood and adolescent years, although the majority said they had been encouraged by their mothers (70%) and/or fathers (59%). Many respondents, however, qualified these statements by telling us that their parents had both encouraged and discouraged them simultaneously:

> *I was told to get good grades but was given no encouragement as to what use they could be put to.*
>
> *My family said, "When are you going to give this up and get married?"*
>
> *When I was growing up my parents were always urging me to succeed but criticizing me for being "too ambitious, too independent, too driven, too verbal"; then when I was accepted into a Ph.D. program my mother said, "Don't you think it's time to enter the real world, don't you think you've had enough school now?"*

Families especially need to learn ways to support the autonomy and emotional development of gifted daughters to help them learn to contend with opposition, and to understand the meaning and impact of giftedness in an individual's life (Callahan, 1980; Ehrlich, 1982; Schwartz, 1980).

12. *In-service training programs* must be developed for K-12 school district personnel (e.g., teachers, counselors, school psychologists, and administrators) to raise their awareness of the many forces inhibiting gifted female students from developing their potential. Such programs should specifically address the ways in which the educational system contributes to women's systematic devaluation of their own abilities, and undermines their access to opportunities for maximum growth.

The power of the educational environment for gifted females cannot be minimized. For 40% of our sample, educational experiences, particularly at the college/university level, were significant in developing their potential. And although support and encouragement from a variety of sources was considered important by two-thirds of our respondents, one-third attributed the greatest help received to teachers and mentors. Happily, 58% said that female teachers had encouraged them during their pre-college years, and 48% indicated that male teachers were supportive during this time; these figures dropped to 37% and 34%, respectively, in adulthood.

It should be noted that 20% of respondents felt they had been discouraged by both male and female teachers in childhood or early adolescence. Another 20% believed that gifted women tend to hide, deny, disparage, and/or choose not to develop their abilities because the educational system does not value, encourage, or help females to achieve their high potential.

13. *Conferences and symposia.* We were overwhelmed by the powerful and positive response of participants to the "Women of High Potential" conference. Much of the sentiment of the group was vividly expressed by two participants when they said:

> *Sitting in a room with women who see themselves as women of high potential feels very satisfying. I feel proud. It is a relief not to worry about alienating other people by our self-confidence and capability, trying to read others...it's hard to put into words. I'm talking about peer pressure to play down our ability and potential. That pressure is present with adults as well as with children. I love being around these women.*

> *I am very excited (thrilled!) at the prospect of a center for research on women of high potential. I think of my granddaughter (age 7) who is already being shaped by the system and her parents, and I have hope for her. Those of us who are older and were shaped so subtly and profoundly and, yet, remained nonconformist, different, odd, have been very lonely. How important it is to find a group that is joining people who have had this experience.*

Conferences, workshops, and symposia can be tremendously exciting, productive, and revitalizing for everyone they touch. Opportunities for highly capable women to interact, share experiences, and support each other in the search for effective ways to meet and transcend the challenges we encounter in a sexist society are rare, but without them the expression of giftedness will remain, for many, an isolating and dispiriting experience.

14. *Finally, the need for a great deal of research* in this area is unquestionable. Comprehensive research programs must be created to expand existing knowledge about the nature of the psychological development of highly capable women, and the internal and external forces which impair their health and inhibit them from taking advantage of opportunities for achievement. I believe there are several questions which require our urgent attention.

What protective and risk factors shape giftedness in women and what internal and external defenses enable gifted women to cultivate their abilities in the face of adverse social conditions?

Are there specific sources of stress to which adult and adolescent gifted women are exposed, and what effect might these stressors have on their physical and psychological well-being? What processes determine the presence or absence of "stress resistance" under similar backgrounds and exposure conditions? We know from the work of Garmezy and Tellegen (1984) that high intelligence is not sufficient to protect ability from erosion; thus, an investigation of the inner wells from which gifted women draw their strength would yield invaluable and practical information for clinicians of every discipline.

Is there a relationship between childhood abuse and giftedness? What is the frequency with which gifted women are victimized by sexual, physical, and/or emotional abuse, and what are the incidence and prevalence of various forms of self-sabotage among this population – eating disorders, depression, learned helplessness, substance abuse?

What are the special issues affecting gifted women who are members of ethnic minority groups, or who are disabled, or who are culturally or economically disadvantaged? What kinds of programs and intervention strategies could be created to increase their contribution to our society?

Maslow (1972) argued that if we deliberately tried to be less than our best, we would be desperately unhappy throughout our lives. Yet many gifted women have found that the choice to become their best is made at great cost – to

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their relationships with parents and partners, to their friendships, to their sense of safety and security in the world, to their identities as women, and to their mental and physical health. I believe we must create a world in which women can live out the promise of their high potential without sacrificing essential parts of themselves. How? By asking and answering difficult questions such as those posed above, by translating research findings into effective strategies for individual and social change, by supporting each other as we dare to be seen and dare to be heard despite centuries of conditioning to be less visible, less vocal, and less capable. And, ultimately, by planning for a time when the challenge of being female and gifted will become obsolete.

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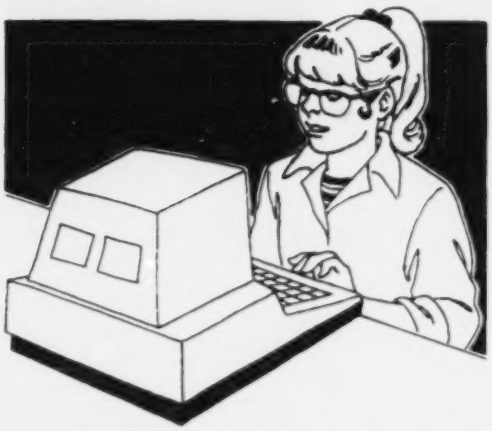

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